BULLETIN

OF THE

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JERUSALEM BAGHDAD

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LETTER FROM THE PRESIDENT'S DESK

The annual December meetings of the Schools were held this year according to a somewhat different schedule. The Trustees met at the Cornell Club in New York City on Saturday, December 13th. The meeting of the Corporation was held in connection with the meetings of the Society of Biblical Literature at the Union Theological Seminary in New York City on Monday, December 29th, at 5:00 o'clock. The meetings, as usual, were well attended and a copy of the minutes of the

Corporation is printed in this number of the BULLETIN, together with an abridged version of the minutes of the Board of Trustees.

The Executive Committee of the Board of Trustees met the morning of Saturday, December 13th, along with the Committee of the Jerusalem School. The Baghdad School Committee had met a short time earlier in Chicago.

The Alumni Association held its annual meeting at noon on December 29th at the Faculty Club, Columbia University. This meeting, as always, was well attended and, I am sure, enjoyed by everyone. I have come to look forward to these spirited gatherings at which we can meet with old friends whom we have come to know through a common experience in Jerusalem.

A joint program meeting was held by the Society of Biblical Literature and the National Association of Biblical Instructors at 8:00 o'clock on Monday evening, December 29th. At this meeting, which was well attended, we enjoyed talks by Director Vaughn Crawford of the Baghdad School on the work of the joint expedition in Nippur; and by Director Neil Richardson, who reported on the program of the Jerusalem School with special attention to a sounding that he and the Annual Professor, Dr. Robert Funk, conducted at Pella. I acted as Chairman of the meeting in my capacity as President of the Schools and concluded the reports of the evening by speaking briefly on the recent expedition at Sardis in Turkey, of which I am Associate Director. We greatly appreciate the kindness of the Union Theological Seminary in making rooms available for the Corporation meeting and the joint meeting.

The Committees of the Schools will function very much as they have in the past. The Jerusalem School Committee will continue to operate with Professor Dentan as Chairman and with the same members as in the past. We have added Dr. Vaughn Crawford to the Baghdad School Committee, which will continue under the leadership of Dr. Samuel N. Kramer as Chairman.

The reports we receive from Jerusalem indicate that the School is operating with maximum efficiency under the directorship of Dr. Fred Winnett of the University of Toronto. Dr. Winnett's most recent report told us that the organized lectures had been completed and that the members of the School were turning their attention to their individual projects. The annual School trip was also about to begin.

We have nothing to report from the Baghdad School. Dr. George Dales, the Fellow of last year, has been busy in Chicago helping the Director of the Nippur Expedition on the publication.

It is my sad duty to announce the passing of two friends of the Schools whose names have been connected with the organization through many years. These are Mrs. Felix Warburg, whose family has been very generous in making financial contributions to the Schools in the past, and Rabbi Jonathan Wise, who represented the Central Conference of American Rabbis on the Corporation for a great many years. I am sure I express the sentiments of all the members of the Corporation when I say that we regret the passing of these two friends and offer our condolences to their families.

Finally, may I again express my appreciation to all those who made the Christmas meetings so successful—the responsible authorities at Union Theological Seminary in New York, particularly Dr. Muilenburg; Mrs. Walton, of the New Haven office, who prepared many of the details for the Trustees and Corporation meetings; and Professor William L. Reed, the Executive Assistant to the President, who manages to think of everything that I usually forget.

DECEMBER MEETING OF THE BOARD OF TRUSTEES

The winter meeting of the Board of Trustees was held at the Cornell Club in New York City, beginning at 1:15 p.m. on Saturday, December 13, 1958. Present of the Trustees were Messrs. Albright (First Vice-President), Brown (Secretary), Cameron, Colt, Detweiler (President), Kienbusch, May, Phelps, Reynolds, Scott, Wilkinson and Wright; of the Associate Trustees, Miss Mowry, Messrs. Muilenburg and Stephens; in other capacities: Messrs. Crawford (Director, Baghdad School), Dentan (Chairman, Jerusalem School Committee), Hanfmann (Director, Sardis Expedition), Kramer (Chairman, Baghdad School Committee), Pope (Director, Jerusalem School 1959-60), Reed (Executive Assistant to the President), Sauers (Provident Trust Company), Speiser (Second Vice-President) and Mrs. Walton (Business Manager).

President Detweiler called the meeting to order and declared a quorum of Trustees present.

It was voted to ratify the mail vote receiving the following institution into Corporation membership:

The University of Wisconsin, Madison, Wisconsin

It was voted to receive the following institutions into Corporation membership on the basis of subsequent applications:

The Midwestern Baptist Theological Seminary, Kansas City, Missouri
The Louisville Presbyterian Theological Seminary, Louisville, Kentucky

It was voted to receive the report of the Assistant Treasurer, presented by Mr. Sauers, as mimeographed and distributed, with an amendment to p. 4 indicating that the difference between total Expenditures and Budget items is made up by drafts on current funds and accumulated reserves.

It was voted to receive the report of H. Neil Richardson, Director of the Jerusalem School in 1957-58, as mimeographed and distributed.

Reporting in behalf of the Jerusalem School Committee, the chairman, Prof. Dentan, stated that a meeting of the Committee was held on December 13, 1958. The work of the Jerusalem School was reviewed and appreciation of Director Winnett's able leadership was expressed, plans were discussed with Director-elect Pope, and consideration was given to the problem of appointments for 1960-61. It was recommended that the following appointments be made to the Jerusalem School for 1959-60:

Annual Professor: Rev. Louis F. Hartman, The Catholic University of America, Washington, D. C.
Fellow: Prof. S. Herbert Bess, Grace Theological Seminary, Winona Lake, Indiana
Honorary Lecturer: Prof. Herbert G. May, Oberlin School of Theology, Oberlin, Ohio.

It was voted to approve the report of the Jerusalem School Committee.

It was voted to receive the report of Professor Vaughn E. Crawford, Director of the Baghdad School, as mimeographed and distributed.

Reporting in behalf of the Baghdad School Committee, the Chairman, Prof.

Kramer, stated that a meeting of the Committee was held on December 5, 1958, in Chicago. Present at the meeting were all five members of the Committee, Messrs. Albright, Braidwood, Cameron, Goetze and Kramer, as well as Messrs. Brown and Speiser of the Schools, and Dr. Jacobsen of the Oriental Institute. The importance of another season of excavation at Nippur was stressed, if possible under the joint auspices of the Oriental Institute and the Baghdad School. However, the Oriental Institute has found it advisable to take a new look at its future excavation plans for Iraq, and is not prepared to commit itself for a 1959-60 season at Nippur. There is a good possibility that the excavations at Nippur will be resumed jointly in 1960-61 but no definite statement can be made until the spring of 1959, when the Institute will have completed its new long-range plans; there will be no Joint Nippur Expedition in the field in 1959-60.

The Committee also discussed the proposal of Prof. Braidwood, that Dr. Bruce Howe be sponsored by the Baghdad School in the very important survey project in northern Iraq for the year 1959-60 within the larger framework of Braidwood's Iraq-Jarmo project in prehistoric research. Prof. Kramer reported that the Committee members agreed that this project, as well as another season at Nippur, was desirable, although there was difference of opinion concerning the possibility of financing both. The Committee, by majority vote, recommends to the Trustees:

Sponsorship of the Braidwood-Howe Survey for 1959-60.
Appointment of Bruce Howe as Annual Professor for 1959-60,

This means that the sum of $7,000 should be budgeted for this survey, half of this to go to Bruce Howe as Annual Professor for 1959-60; the remaining $3,500 will be drawn from the Nies Reserve Fund.

The Committee also voted unanimously to renew the appointment, without stipend, of Vaughn Crawford as Director of the Baghdad School, for another three year period, 1959-61.

Prof. Kramer further reported that Dr. Warren Benedict, who had been appointed Annual Fellow of the Baghdad School for 1958-59, has found it necessary, for personal reasons, to decline the appointment. The Committee urgently recommends that the sum allocated for his salary be added to the Nies Reserve Fund to be used for future excavations and surveys. Following considerable discussion, it was voted to approve the report and to reaffirm interest in continuing, when possible, the excavations at Nippur.

President Detweiler announced his appointment of Director Crawford as a member of the Baghdad School Committee.

Professor Hanfmann reported on the Sardis Expedition which is sponsored by the Schools, the Bollingen Foundation, Cornell University and the Fogg Museum of Harvard University. After preliminary arrangements at Sardis, excavations were carried on from June 20, to August 30, 1958. The officials of the Turkish government and its Department of Antiquities cooperated in every way. Professor Hanfmann circulated photographs and a written report which indicated that the results of this first season justified and exceeded all expectations. A second joint excavation is planned for the summer of 1959.

Professor Albright, reporting in behalf of the Special Committee on the Excavation of Nimrud Dagh, stated that there has not been a meeting of the Committee since April. Substantial progress has been made in preparing the materials for publication; a more complete report will be made at the next meeting of the Trustees.

Professor Albright, reporting as chairman of the Committee on Publications, stated that the *Bulletin*, the *Biblical Archaeologist* and the *Journal of Cuneiform Studies* are appearing regularly, although they have been late owing to the fact that the editors have moved recently. An *Annual*, a double volume, will go to press soon and will contain reports of excavations at Gibeah, Petra and Ader. It was also noted that the trade publications stocked at the New Haven office have not been selling because School members are able to purchase the books elsewhere at greater discounts than the School can offer. It seems advisable to liquidate the stock as soon as possible, and make additional purchases only after consultation with the Committee on Publications.

The report of the Nominating Committee was presented by Mr. Colt; Mr. Reynolds presided and called for the vote. It was voted to elect the following officers:

President, A. Henry Detweiler
First Vice-President, W. F. Albright
Second Vice-President, E. A. Speiser
Secretary, Frank E. Brown
Executive Assistant to the President, William L. Reed
Treasurer, John W. Warrington
Assistant Treasurer, The Provident Tradesmens Bank & Trust Co.
Associate Trustee, Robert Braidwood
Business Manager, G. R. Walton
Counsel, Pepper, Bodine, Frick, Scheetz and Hamilton
Executive Committee, George Cameron

It was voted to express deep appreciation to the officers for their devotion and efficiency.

It was voted to elect Mr. Karl Katz, former Rabinowitz Fellow, as Corresponding Fellow of the Schools in Israel for the coming year.

It was agreed that the next meeting take place on Sunday, April 5, 1959, at 3:00 p. m.

The meeting was adjourned at 3:45 p. m.

WILLIAM L. REED,
Secretary pro tem.

ANNUAL MEETING OF THE CORPORATION

The annual meeting of the Corporation was held at Union Theological Seminary in New York City, on Monday, December 29, 1958. The meeting was called to order at 5:30 p. m. by President A. Henry Detweiler. He extended greetings to The University of Wisconsin, The Midwestern Baptist Theological Seminary and The Louisville Presbyterian Theological Seminary, which were elected to membership by the Trustees since the last meeting of the Corporation. The roll of Corporation members was called and a quorum declared by the President. There were forty-nine institutions represented in person or by proxy.

It was voted to approve the minutes of the preceding meeting as published in BULLETIN, No. 149, and to receive the following reports as mimeographed and distributed prior to the meeting:

The Fifty-Sixth Annual Report of the President
The Annual Financial Report of the Treasurer as audited (June 30, 1958)
The Report of the Director of the Baghdad School
The Report of the Director of the Jerusalem School

In connection with these reports, the President commented on the present status of the Schools in Iraq and Jordan, reported greetings from Director Fred V. Winnett, and announced the following appointments as made by the Trustees at their meeting on December 13, 1958:

Baghdad School— Vaughn Crawford, Director, 1959-60
Bruce Howe, Annual Professor, 1959-60
Jerusalem School—Marvin H. Pope, Director, 1959-60
Louis F. Hartman, Annual Professor, 1959-60
S. Herbert Bess, Fellow, 1959-60
Herbert G. May, Honorary Lecturer, 1959-60

The report of the Evaluation Committee was presented by Professor G. Ernest Wright; other members were Professors Ferris Stephens and Harry Orlinsky. A meeting of the Committee was held last April, Professor Henry Gehman, the retiring Chairman, presiding; the report has been assembled by letter and telephone. The report indicated appreciation of the loyalty of the Trustees and countless friends of the Schools, the officers, and the staff at the Jerusalem School during the past year, and noted the problems which make it difficult to make long-range plans for

the work of the Schools. The report recommended that an attempt be made to increase the number of yearly gifts to the Schools' program on the part of interested friends, and to consider the reestablishment of the summer seminars and the starting of a scholar's seminar modelled after that of the German Evangelical group.

It was voted to accept the report of the Evaluation Committee.

The report of the Nominating Committee, composed of Messrs. H. L. Ginsberg and Patrick W. Skehan, was presented by Chairman Skehan.

It was voted to accept the report and to elect the following:

TRUSTEES

William F. Albright, Professor Emeritus, Johns Hopkins University	1959-61
George Cameron, Professor, University of Michigan	1959-61
Donald Scott, Director Emeritus, Peabody Museum, Harvard University	1959-61
Charles K. Wilkinson, Curator, Metropolitan Museum	1959-61

ASSOCIATE TRUSTEES

Harald Ingholt, Professor, Yale University	1959-60
Harry M. Orlinsky, Professor, Jewish Institute of Religion	1959-60

MEMBER OF EVALUATION COMMITTEE

Bernhard W. Anderson, Dean, Drew Theological Seminary

NOMINATING COMMITTEE

Messrs. F. M. Cross, Jr., James Muilenburg, Ferris Stephens, and Miss Lucetta Mowry, Chairman.

It was voted to adjourn at 6:10 p. m.

WILLIAM L. REED,
Secretary pro tem.

MEMBERS AND CONTRIBUTORS

INSTITUTIONAL CORPORATION MEMBERS AS OF DECEMBER, 1958

American Oriental Society—Prof. Herbert G. May
American University of Beirut—Secretary
Andover Newton Theological Seminary—Prof. Russell C. Tuck
Archaeological Institute of America—Prof. Frank E. Brown
Asbury Theological Seminary—Prof. George A. Turner
Augustana Theological Seminary—Prof. Carl A. Anderson
Australian Institute of Archaeology—Pres. Walter J. Beasley
Bangor Theological Seminary—Pres. Frederick J. Whittaker
Berkeley Baptist Divinity School—Pres. Sandford Fleming
Berkeley Divinity School—Prof. R. L. Hicks
Bethany Biblical Seminary — Prof. David J. Wieand
Boston University School of Theology — Prof. H. Neil Richardson
Brigham Young University — Prof. Sidney B. Sperry
Brown University—Prof. Ernest S. Frerichs
Candler School of Theology (Emory University)—Prof. Boone M. Bowen
Catholic University of America—Msgr. Patrick W. Skehan
Central Conference of American Rabbis—Rabbi Jonah B. Wise
Chicago Lutheran Theological Seminary—Prof. Robert J. Marshall
Christian Theological Seminary (Formerly Butler Univ. School of Religion)—Prof. David C. Pellett
Church Divinity School of the Pacific—Dean Sherman E. Johnson
College of the Bible (Lexington, Ky.), Prof. William L. Reed
Columbia Theological Seminary (Georgia)—Prof. James H. Gailey, Jr.
Columbia University—Prof. Arthur Jeffery
Concordia Theological Seminary—Prof. Arthur Klinck
Cornell University—Prof. Isaac Rabinowitz
Crozer Theological Seminary — Prof. Jesse H. Brown
Drake University Divinity School—Prof. Charles L. Smith
Drew Theological Seminary—Prof. Lawrence E. Toombs
Dropsie College—Pres. A. A. Neuman
Dubuque Theological Seminary—Prof. Joseph L. Mihelic
Duke University—Prof. William F. Stinespring
Dumbarton Oakes Research Library—Prof. John S. Thacher
Eastern Baptist Theological Seminary — Prof. Edward R. Dalglish
Episcopal Theological School—Prof. Henry M. Shires
Episcopal Theological Seminary of the Southwest—Prof. F. W. Young

Evangelical & Reformed Church Theological Seminary—Prof. Donald M. Englert
Fordham University—Rev. J. Franklin Ewing, S. J.
Fuller Theological Seminary—Prof. William LaSor
Garrett Biblical Institute—Prof Edward P. Blair
General Theological Seminary—Prof. Robert C. Dentan
Grace Theological Seminary—Prof. John Rea
Hamma Divinity School—Dean E. E. Flack
Hartford Seminary Foundation — Prof. Moses Bailey
Harvard University—Prof. Frank M. Cross
Haverford College—Prof. John W. Flight
Hebrew Union College—Pres. Nelson Glueck
Iliff School of Theology — Prof. Walter G. Williams
Jewish Institute of Religion—Prof. Harry M. Orlinsky
Jewish Theological Seminary of America—Prof. Robert Gordis
Johns Hopkins University—Prof. William F. Albright
Kenyon College—Dean Corwin C. Roach
Louisville Presbyterian Seminary—Prof. Arnold B. Rhodes
Lutheran Theological Seminary (Gettysburg)—Prof. Jacob M. Myers
Lutheran Theological Seminary (Philadelphia)—Prof. Russell D. Snyder
McCormick Theological Seminary—Prof. Floyd V. Filson
McGill University—Prof. Stanley B. Frost
Metropolitan Museum—Mr. Charles K. Wilkinson
Midwestern Baptist Theological Seminary—Prof. William H. Morton
Moravian College—Pres. Raymond S. Haupert
Mount Holyoke College—Prof. R. J. Tamblyn
New Brunswick Theological Seminary—Prof. H. B. MacLean
Northwest Christian College—Prof. Ross Griffeth
Northwestern Lutheran Theological Seminary—Prof. William H. Cooper
Oberlin Graduate School of Theology—Prof. Herbert G. May
Pacific School of Religion—Prof. Jack Finegan
Phillips University College of the Bible—Prof. Robert G. Martin
Pittsburgh-Xenia Theological Seminary — Prof. James L. Kelso
Potomac University (Formerly SDA Theological Seminary)—Prof. Siegfried H. Horn
Princeton Theological Seminary—Prof. Henry S. Gehman
Princeton University—Prof. T. Cuyler Young
Rosary College—Sister Mary T. Doyle
San Francisco Theological Seminary — Dean Gurdon C. Oxtoby
Seabury-Western Theological Seminary — Dean Charles U. Harris
Smith College—Prof. Virginia Corwin
Society of Biblical Literature & Exegesis—Prof. G. Ernest Wright
Southeastern Baptist Theological Seminary—Prof. Marc H. Lovelace
Southern Baptist Theological Seminary—Prof. Joseph Callaway
Southern Methodist University—Prof. Wesley C. Davis
Southwestern Baptist Theological Seminary—Prof. E. Leslie Carlson
St. Mary's Seminary—Very Rev. Lloyd P. McDonald
Syracuse University—Prof. Dwight M. Beck
Texas Christian University—Prof. John Stewart
Union Theological Seminary (New York)—Prof. James Muilenburg
Union Theological Seminary (Virginia) — Prof. John Bright
United Theological Seminary—Prof. G. W. Frey
University of California—Prof. Walter Fischel
University of Chicago — Prof. Raymond A. Bowman
University of Cincinnati—Prof. William T. Semple
University of Michigan — Prof. George G. Cameron
University of Pennsylvania—Prof. E. A. Speiser
University of Toronto—Prof. F. V. Winnett
University of Wisconsin—Prof. Menahem Mansoor
Vanderbilt University—Prof. J. Philip Hyatt
Virginia Theological Seminary (Alexandria) — Prof. M. L. Newman
Wake Forest College—Prof. Emmett Hamrick
Wellesley College—Prof. Lucetta Mowry
Wesley Theological Seminary—Prof. Montgomery J. Shroyer
Western Theological Seminary (Mich.)—Prof. Lester J. Kuyper
Western Theological Seminary (Penna.)—Prof. David N. Freedman
Wheaton College (Ill.)—Prof. Joseph P. Free
Yale University—Prof. Harald Ingholt
Yeshiva University—Prof. Joshua Finkel
Zion Research Foundation—Miss A. Marguerite Smith

(Total 103)

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ASSOCIATE MEMBERS

The total number of associate members is now about 800, who pay $7.00 each and receive the BULLETIN, the *Biblical Archaeologist*, mimeographed newsletters, and a discount on publications.

ANNUAL FINANCIAL REPORT OF THE AMERICAN SCHOOLS OF ORIENTAL RESEARCH

FOR THE YEAR ENDING JUNE 30, 1958

RECEIPTS

Income from Investments		
General Endowment	$20,093.65	
Ludlow Bull Fund	56.40	
Henry Thatcher Fowler Memorial	30.56	
Helen N. Moulton Memorial	305.65	
Edward T. Newell Fund	305.65	
Edward Robinson Fund	1,144.48	
Ann E. Stodder Fund	213.95	
Charles C. Torrey Fund	55.87	
Jastrow Memorial Fund	37.50	
John P. Peters Memorial Fund	12.50	
Schofield Memorial Fund	12.50	
Reserve for Research	191.93	
Felix Warburg Reserve	272.50	
J. B. Nies Reserve	Capitalized	
Prudential Reserve	Capitalized	$ 22,733.14
Contributions, etc.		
Corporation Dues	$ 9,900.00	
Memberships	270.00	
Associate Memberships	3,239.75	
Patrons Contributions	500.00	13,909.75
Special Contributions		
Walter E. Seeley Memorial Fund (Nippur)	$ 5,400.00	
Metropolitan Museum (Nippur)	5,000.00	
Yale University (Nippur)	2,000.00	12,400.00

Sale of Publications			
Annual		$ 1,792.32	
Biblical Archaeologist		4,605.24	
Bulletin and Supplementary Studies		2,842.72	9240.28
Journal of Cuneiform Studies		1,731.60	
Other Publications		445.90	
Dead Sea Scrolls		722.43	
Trade Publications		2,454.25	14,594.46
Total of Budgeted Items			$ 63,637.35
Items Not Budgeted			
J. B. Nies Estate for Publications		$ 108.11	
Contribution for General Use		27.80	
Royalties Received		24.20	
Slide Rental		21.00	
Interest on Loan to Employee		16.61	
Miscellaneous Income (1958 Sardis charge)		600.00	797.72
Total Receipts (exclusive of Sardis Account)			$ 64,435.07
EXPENDITURES			
Jerusalem School Account			
Director's Salary		$ 4,999.92	
Director's Travel Allowance		1,100.00	
Annual Professor's Stipend		2,800.00	
Annual Professor's Travel Allowance		1,100.00	
Professor of Archaeology		2,800.00	
Fellows' Living Allowance		810.00	
Fellows' Travel Allowance		1,100.00	
Insurance		676.21	
Prudential Reserve Contribution		100.00	
Operation of School—			
Paid by Treasurer	$ 139.97		
Paid at Jerusalem	15,748.28		
	$15,888.25		
Received at Jerusalem	11,541.96	4,346.29	
Archaeological Work—			
Paid by Treasurer	$ 1,700.00		
Paid at Jerusalem	544.64	2,244.64	$ 22,077.06
Baghdad School			
Director's Salary		—	
Archaeological Work (Nippur)		$15,500.00	$ 15,500.00
Publications			
Annual		$ 3,015.15	
Bulletin and Supplementary Studies		2,515.57	
Biblical Archaeologist		3,202.36	8733.08
Journal of Cuneiform Studies (Charged Nies Fund—$3,499.05)		—	
Appropriation to Nies Reserve for portion of cost of Cuneiform Studies		1,000.00	$ 9,733.08
Business Office			
Manager's Salary		$ 3,729.96	
Clerical Help		2,819.96	
Part Time Help		417.14	

Supplies and Printing	1,440.89	
Telephone and Telegraph	124.19	
Postage and Express	1,342.34	$ 9,874.48
Miscellaneous Expenses		
Bank Charges (New Haven)	$ 95.07	
Costs to Remit Funds to Jerusalem	12.00	
Insurance at New Haven	19.02	
Audit at New Haven	25.00	
Trustees' Meeting Costs	13.29	
Safe Deposit Box at New Haven	27.50	$ 191.88
Administration		
Assistant Treasurer's Fee	$ 2,100.00	
Officers' Travel Expense	822.27	
Secretarial Help	769.32	
Postage, Telephone & Telegraph	545.91	
Audit Fee	75.00	
Workmen's Compensation Insurance	530.70	$ 4,843.20
Total Budget Items		$ 62,219.70
Items Not Budgeted		
Automobile Account—		
Trade Publications—Bought	$ 2,369.85	
Other Publications—Bought	6,266.60	
Employers Share of Social Security Costs	374.52	$ 9,010.97
Total Expenditures		* $ 71,230.67

FINANCIAL STATEMENT

ASSETS		
Cash for Current Use—Philadelphia	$ 3,806.25	
New Haven, etc.	2,598.40	
Jerusalem	1,620.09	
Awaiting Investment	177.25	
Held in Reserve	(858.21)	$ 7,343.78
Investments (Market Value 4/30/58—$601,689.40)		452,912.89
Furnishings and Equipment		4,601.46
Buildings in Jerusalem		69,432.00
Land in Jerusalem		27,181.93
Loans and Accounts Receivable		1,158.76
Advance Payment on 1958-1959 Budget		6,540.00
		$569,170.82
LIABILITIES		
Advance Receipt on Corporation Dues (1958-59)		$ 300.00
Due Assistant Treasurer		175.00
Principal J. B. Nies Building Fund		52,666.63
Principal of Endowment Funds		399,548.09
Principal of Reserve Fund		
J. B. Nies for Baghdad School	$29,988.69	
Reserve for Research	8,901.40	
Felix M. Warburg Reserve	12,203.75	
Prudential Reserve	1,590.00	52,683.84
Balance unspent in Sardis Account		$ 1,730.68
General Corporate Account		62,066.58
		$569,170.82

* Difference made up by drafts on accumulated reserves and current funds.

"We have examined the Financial Statement of Assets and Liabilities of the American Schools of Oriental Research at June 30, 1958, and the related Statements of General Income and General Expenses for the year then ended. At the New Haven, Connecticut office and at Jerusalem, independent auditors reviewed the financial status of each operation as of the date of this report, which were accepted by us without further verification. Subject to the correctness of the other auditors' reports, in our opinion, the report prepared by the Provident Tradesmens Bank and Trust Company of Philadelphia properly reflects the financial condition of the American Schools of Oriental Research at June 30, 1958, and the results of operations for the year ended.

WHEELER, CROSBIE, SEILER and Co.
Certified Public Accountants
121 South Broad Street
Philadelphia 7, Pennsylvania

PRELIMINARY REPORT ON ARCHAEOLOGICAL SOUNDINGS AT ṢOḤÂR ('OMÂN)

RAY L. CLEVELAND

During the month of January, 1958, the first archaeological excavations in 'Omân were carried out at Ṣoḥâr (Ṣuḥâr) by the American Foundation for the Study of Man as part of a campaign of exploration concentrated on the Bâṭina Plain northwest of Muscat (see map, Fig. 1).[1] The activities of this expedition extended from Muscat (Masqaṭ) and its immediate vicinity to as far north as Bureimī, Dubai and Sharja[2] in Trucial 'Omân and included further archaeological exploration and excavation in the Province of Ḍhofâr[3] more than 600 miles to the southwest.[4] Members of the expedition were Dr. Wendell Phillips (Director), Mr. William B. Terry (Manager and Photographer), Dr. Louis A. M. Krause (Physician), Professor A. M. Honeyman (Arabist and Archaeologist), Jama Ismâ'îl (head-man), and the writer, who supervised most of the excavation.

[1] A fuller report on these soundings, together with a complete description of the pottery, is planned for inclusion in a future volume of the Publications of the American Foundation for the Study of Man.

[2] The name of this town has appeared on recent maps as *Šâriqah*. Since Arabic *jim* is usually pronounced *gim* in 'Omân (as in much of Egypt and Yemen), the name is heard locally as *Šarga*. On the other hand, the sound *g* in most Arabian dialects (including those of the Nejd) represents *qâf*. As a result, confusion has arisen, and the simple etymological meaning "eastern," however enticing, has no justification.

[3] The transcription *ḍh* is here used to represent Arabic ظ, although it is not completely satisfactory. The usual *ẓ*, which is based on the pronunciation first met by Western scholars (in Egypt, the Syrian Littoral, and the Maghreb), is not appropriate for place names in the Arabian Peninsula, where the pronunciation is a velarized correlative of *ḍal*. The latter pronunciation is also common in many border areas, as among the *bedū* and *fellâḥîn* of Palestine, and is being taught widely in Arabic schools. The transcription *d̲* (used by Rhodokanakis) might prove to be satisfactory.

[4] A complete account of the expedition will appear in a book on 'Omân by Wendell Phillips scheduled for publication in 1959.

A number of factors led to the decision to make soundings at Ṣoḥâr: the security of the Bâṭina Coast and the friendly co-operation of the government of 'Omân,[5] the great extent of the occupational debris, the glowing accounts of the city given by the classical Arab geographers [6] and its reputation as an ancient city, and the apparent absence of a more impressive site on the entire Bâṭina Coast (cf. Fig. 2).

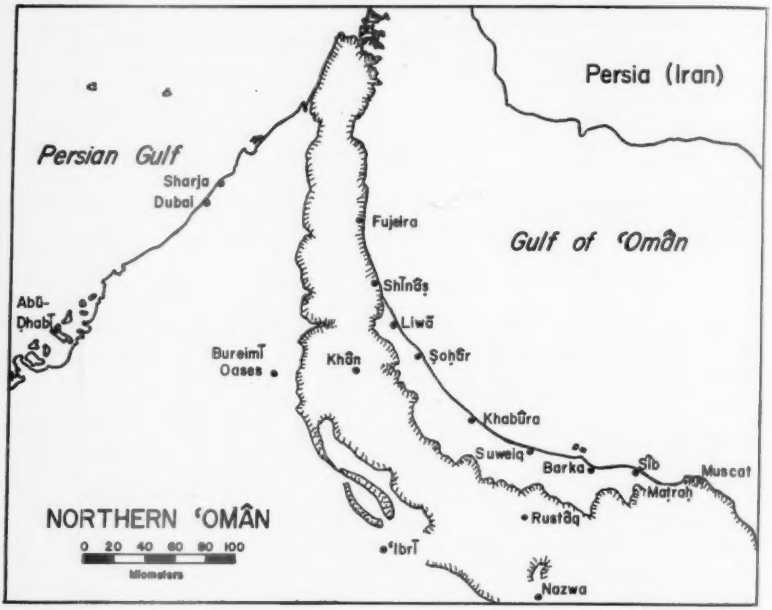

Fig. 1. Outline map of northern 'Omân. The alluvial plain known as the Bâṭina ("inner") stretches from near Muscat to Shinâṣ inside the curve of the Ḥajar Mountains. The region on the desert side of the mountains from Bureimî to 'Ibrî is called eḍh-Ḍhâhira ("the outer").

The *tell* of Ṣoḥâr, occupied in large part by shops, houses and huts at pesent, stretches along the level beach for nearly two kilometers (NW-SE), although it is less than 500 meters wide. (Occupation, as shown by the presence of scattered sherds extended at one time about a kilometer west of the mound, but has left only a very thin deposit.) There are no striking natural features except a small inlet or *khôr* at the south end of the city and another one—somewhat larger—marking the

[5] A word of appreciation is due to Sa'îd bin Taimûr, Sulṭân of Muscat and 'Omân, who did everything possible to make the expedition comfortable and successful. He was particularly generous in supplying transportation and personnel, which were essential to the success of the campaign.

[6] Including Idrîsî, Yâqût, and Abû-l-Fidâ'. Idrîsî states that Ṣoḥâr was the oldest of the cities of 'Omân (*2nd Clime*, VI).

northern limit of the main occupation of more recent times. Both of these *wâdī*-mouths are separated from the sea by sandbars, but either or both of them might have served as small-boat harbors in ancient times if the passage to the sea were open. A low, narrow *tell* stretches northward along the beach for nearly a kilometer from the north *khôr*.

FIG. 2. A U-tube in the aqueduct which carried water to the Ṣoḥâr area from the foot of the mountains. The water flowed from the foreground into the nearer shaft and under the *wâdī*-bed, emerging from the shaft on the opposite side of the *wâdī* and then continuing eastward. This aqueduct was probably built in about the ninth or tenth century A. D., undoubtedly by a Persian *muhandis*.

Actual excavation at Ṣoḥâr lasted from January 12th through the 31st. The first area opened (S-I) was on the unoccupied *tell* to the north of the main city. Three squares, 5 m. × 5 m., were opened on the inland slope of the highest point on the north mound (near its north end). The three squares were in a line running SW-NE, from the base of the mound toward the top. In the lowest square, beach sand (which here has the same significance as bedrock or virgin soil elsewhere) was reached

less than a meter below the surface, and no building remains were found. In the second square, separated from the first by 2 m., there was a clay floor preserved in one corner, about 1.5 m. below the surface. This represented the only building phase found in this square, being almost immediately above beach sand. In the third square (S-I, C), which was 2 m. from the second and near the inland crest of the low mound, the accumulation of clay and other debris was some 3 m. thick, but only one major building phase was found, above which were a series of clay surfaces hardened by occupation. The pottery from all levels of these three squares was fairly uniform, indicating a rather short period of occupation (or conceivably considerable disturbance and mixing of debris). None of the sherds could be dated with any certainty to the pre-Islamic period, but a fragment of a steatite cooking pot found in S-I, C aroused some interest (see below).

The second area investigated was inside the compound of the fort, which stands at the south end of the city. A trench 2 m. × 10 m. was laid out some 20 m. from the west wall of the compound, running approximately north-south, i. e. obliquely to the walls of the fort. The recent accumulation in this area proved to be quite thick; at a depth of nearly 5 m. below the surface, sherds of about the 12th century and later were still being found. At this depth the sides of the trench threatened to collapse, owing to the looseness of the soil and debris, and the area was abandoned. The corner of a large building, diagonal to the sides of the trench, was uncovered some 2 m. below the surface. Its preserved height above the bottom of its foundations was approximately one meter and it was built of small (ca. 15 cm.) square, kiln-baked bricks of a type characteristic of later Islamic times. This building may have been erected during the Portuguese occupation of the city.

The third area investigated was an area 5 m. × 5 m. on the inland slope of the main mound, somewhat south of the center of the city. It was directly on the opposite side of the mound from the Customs House, located next to the beach, which served as expedition headquarters and living quarters. This excavated square (S-V) was some 150 m. inside the ancient west gate of the city wall, which has nearly all collapsed, except for the brickwork of the arch (Fig. 3). Although excavation went through nearly 5 m. of accumulated clay and debris, beach sand was reached without the discovery of objects earlier than about the 10th century. A series of hard surfaces, most likely the floors of huts, were found in the upper meter or so. The lowest of these surfaces had several large jars buried up to the brim, like jars (of a type known as a *ḥubb* both in 'Omân and in 'Irâq) found at several sites in 'Irâq.[7] No building remains were found in the lower levels, although a brick-lined well was disclosed near the northeast corner of the square; several meters of debris had accumulated after it was abandoned. The south part of this square was nearly all included in a large rubbish pit full of ash, sherds, and lumps or blobs of dark-colored glass or glaze. A glass or pottery factory had existed nearby, but did not extend into the excavated area.

[7] Gerald Reitlinger, "Unglazed Relief Pottery from Northern Mesopotamia," *Ars Islamica*, Vols. XV-XVI (1951), p. 16a.

The last area investigated was in an open space near the center of the city. This space comprised the highest part of the mound and is just above the modern *sûq* area. This 5 m. × 5 m. area (S-II) was dug rather hurriedly, though with adequate supervision at all times. Nearly 8 m. of Islamic occupation rested on beach sand. Quantities of sherds of the famous "Persian" blue-green glazed ware (11th-13th centuries) were found in this square, as elsewhere at Ṣoḥâr, but nothing suggesting a pre-Islamic occupation was uncovered.

FIG. 3. Area S-V, near south end of Ṣoḥâr on inland side, looking southwest. The arched gateway of the earlier Islamic city is visible in the background. The uncultivated land outside this gate was once covered with huts, as indicated by the presence of sherds of Early Islamic pottery.

Pottery finds, although including only three or four complete pieces, were diverse and interesting.[8] In addition to Islamic wares, fragments of Chinese celadon and blue-and-white porcelains were found, as well as European faience and porcelain in levels later than the sixteenth century.

The earliest sherds from the campaign to be dated with complete certainty belonged to blue-green storage jars. Fragments from the site (Fig. 4, left—not all from the same pot) represented nearly all the characteristic decorations appearing on a well-known example from

[8] The writer is greatly indebted to Dr. Richard Ettinghausen, who examined selected sherds from Ṣoḥâr and made numerous valuable suggestions.

Susa,[9] dated by Arthur Lane to the 7th or 8th century A. D.[10] Many of the blue-green and dark-blue glazed sherds, however, seem to be slightly later, falling in the eleventh-thirteenth centuries.

Another distinct group of sherds represents the Persian *sgraffiato* ware, a "lead-glazed red earthenware with designs engraved through a white slip."[11] Most of the Ṣoḥâr examples (Fig. 4, right, nos. 1, 3-6; no. 2 is from Ḥôra Borgha, near Ṣoḥâr) have a pale green glaze, though light

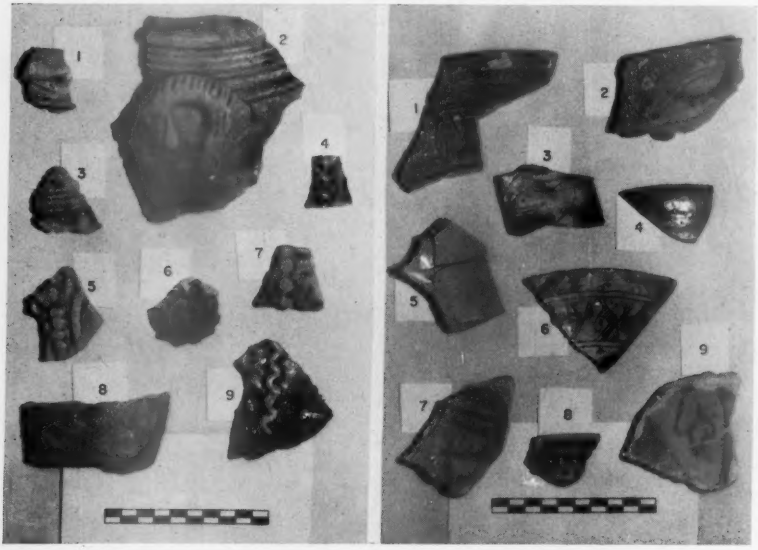

FIG. 4. Blue-green glazed (left), *sgraffiato* (right, 1-6), and underglazed painted (right, 7-9) sherds.

brown glaze also appears. This ware, largely designed in imitation of engraved metalwork, belongs mostly to the 12th and 13th centuries,[12] although it was known several centuries earlier.

The underglaze painted sherds (Fig. 4, right, nos. 7-9), on cream (almost white) clay, were found in very small quantities. The background of mottled turquoise is decorated with dark purple-brown (almost black) paint in rather broad, scribbly lines; the glaze is almost colorless.

[9] Raymond Koechlin, *Les céramiques musulmanes de Suse au Musée du Louvre*, in *Mémoires de la Mission Archéologique de Perse*, Vol. XIX (Paris, 1928), Pl. VIII.

[10] *Early Islamic Pottery: Mesopotamia, Egypt and Persia* (London, 1958), Pl. 3.

[11] *Ibid.*, p. 25.

[12] *Ibid.*, pp. 25 ff. An extensive collection of *sgraffiato* comes from Bâmiyân in Afghanistan and has been admirably discussed by J. C. Gardin in "Poteries de Bamiyan," *Ars Orientalis II* (1957), pp. 227-245. Since it is known from historical sources that Bâmiyân was destroyed in A. D. 1221 by Mongolian invaders, this collection is of great importance for the chronology of Persian *sgraffiato*.

Underglaze painted ware of this type seems to have gradually replaced the *sgraffiato* ware in the thirteenth and fourteenth centuries and continued in use into the fifteenth.[13]

The most striking non-glazed pottery found at Ṣoḥâr is the thin, well levigated pink ware painted in white, brown, and rusty red (Fig. 5, left). The most elaborate design (sherd no. 8) consists of an array of stylized flowers (?), alternately done in solid brown and red outlined in brown, on a white field bordered by narrow brown bands, rows of brown dots, and one broad red band. The context indicates an early Islamic date. No parallels appear in accessible publications.

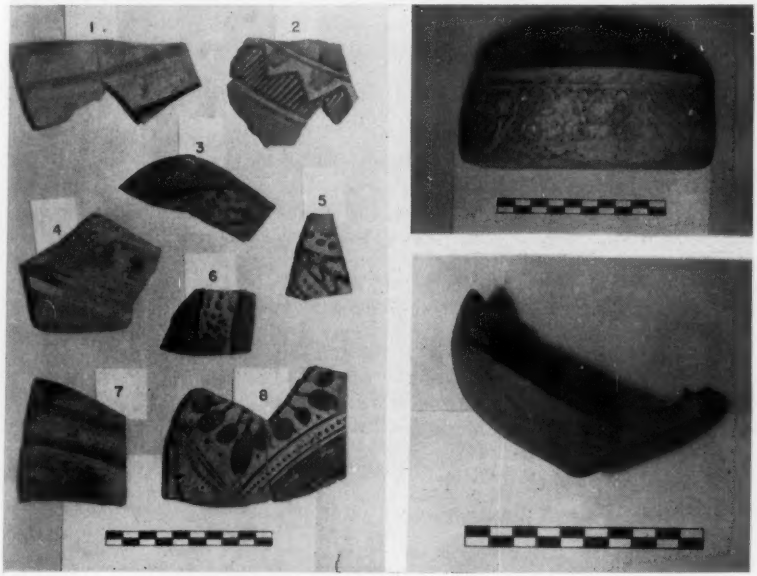

FIG. 5. Sherds painted in white, brown, and red (left), glazed dish with moulded decoration (right, above), and fragment of "grenade" (right, below).

A flat-bottomed dish with vertical walls (Fig. 5, right, above) affords an example of intricate molded decoration. Although Islamic in date, this fragment bears the crescent surrounding the solar disc (near left in photograph), a symbol common in pagan South-Arabian religion.[14]

[13] See Gerald Reitlinger, "Islamic Pottery from Kish," *Ars Islamica*, Vol. II, Part 2 (1935), p. 204. Cf. also Lane, *Islamic Pottery from the Ninth to the Fourteenth Centuries A. D. in the Collection of Sir Eldred Hitchcock* (London, 1956), Pl. 77, which is dated to the 14th or 15th century (p. 34).

[14] Cf., for example, the small altar from Yemen published by Carl Rathjens and Hermann v. Wissmann in *Vorislamische Altertümer* (Hamburg, 1932), Phot. 66 (p. 112). Similar altars with the symbol of the moon-god have been found as far east as Khôr Rôrī in Ḍhofâr.

The bowl, of well levigated cream-colored ware, was covered with a thin, pale-yellow glaze which has been worn away in part. Three bowls of the same form with similar molded decoration (although with pale green glaze) were found by the French expedition to Susa.[15] The Ṣoḥâr piece can be safely assigned to the 9th, 10th, or 11th century.

A singularly interesting pottery fragment from Ṣoḥâr is the bottom of a pear-shaped "grenade" (Fig. 5, right, below).[16] The gray ware is extremely hard and could not have been easily broken. The fragment is highly polished on the outside, and the inside has broad, shallow horizontal ribbing. Vessels of this type have been found in many parts of the Near East; a particularly varied group comes from Baalbek.[17] Although most known examples are decorated with molded or incised designs, the Ṣoḥâr piece is plain, as is a brown one of almost identical form from Baalbek.[18] Most sherds from Baalbek are from the 13th and 14th centuries,[19] and this must indicate the general range of "grenades" of this type.[20]

A wall fragment of a steatite (soapstone) cooking pot (Fig. 6) found in the first area excavated (on the north) raised some temporary hope that Ṣoḥâr had indeed been an important town centuries before the rise of Islam. The narrow ledge-handle, the margin above it, and the tooling below it bear a striking similarity to steatite vessels found in Wâdī Beiḥân, more than 1,000 miles to the southwest, which belong largely to pre-Christian times.[21] Other fragments of steatite vessels exhibiting varied styles were also found at Ṣoḥâr, some in contexts as late as about the 12th century. The fragment in question actually has no exact parallel in form or detail from Beiḥân, and it must be admitted that while we have a development of the same tradition at Ṣoḥâr the pottery indicates that there is no chronological synchronism.

In conclusion, it may be said that no occupational remains earlier

[15] Koechlin, *op. cit.*, no. 124 (Pl. XVIII), no. 126 (Pl. XVII), and no. 129 (Pl. XX); the relief decoration on no. 124 is almost identical to that of the Ṣoḥâr example. According to Koechlin (p. 79), fragments of similar ware were found at Sāmarrā, so a date in the neighborhood of the 9th century is not unlikely. The context of the Ṣoḥâr piece, on the other hand, suggests a slightly later date.

[16] J. Sauvaget, "Flacons à vin ou grenades à 'feu grégeois'?," *Mélanges Henri Grégoire*, in *Annuaire de l'Institut de Philologie et d'Histoire Orientales et Slaves*, Vol. IX (Bruxelles, 1949), pp. 525-530, has somewhat convincingly defended the theory that these objects were used in the Near East as weapons and, in fact, contained the "Greek fire," an incendiary naphtha compound (*naft* in Arabic sources) of Mediaeval writers. Alternate theories propose that they were used as containers for wine or perfume.

[17] F. Sarre, "Die Kleinfunde," *Baalbek: Ergebnisse der Ausgrabungen und Untersuchungen in den Jahren 1898 bis 1905*, Vol. III (Berlin, 1925), pp. 133-135.

[18] *Ibid.*, p. 134, no. 91, and Fig. 66:4.

[19] *Ibid.*, p. 113.

[20] Arthur Lane (*Early Islamic Pottery*, Pl. 36F) dates an example from Raqqa as "12th-13th century?" He is not convinced that they were used as incendiary bombs (p. 27).

[21] Many such steatite vessels are among the great quantity of artifacts recovered by the American Foundation for the Study of Man which are being prepared for publication at the Johns Hopkins University. See BULLETIN 119, pp. 5-15, and Wendell Phillips, *Qataban and Sheba* (New York, 1955).

than about the sixth or seventh century were found at Ṣoḥâr (although they may once have existed), but archaeological soundings have demonstrated extensive occupation in 'Abbâsid times (as described in the literary sources) as well as the close commercial relationships between

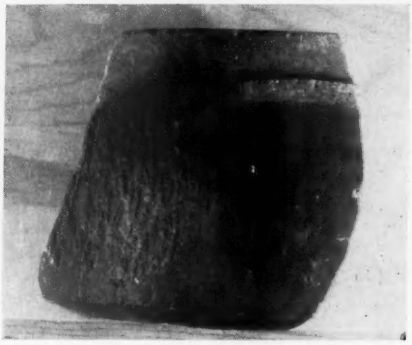

FIG. 6. Side of steatite cooking pot, 13.5 cm. in height; approximate diameter of rim, 26 cm.

'Omân, other parts of the Islamic world, and the Far East. It is to be hoped that further archaeological work either at Ṣoḥâr or elsewhere on the Bâṭina Plain will be undertaken, making further contributions to the history of 'Omân.

ANCIENT AGRICULTURAL REMAINS IN THE CENTRAL NEGEB: THE TELEILÂT EL-'ANAB

PHILIP MAYERSON

Recently, President Glueck has attempted an explanation of the *teleilât el-'anab* and has come to the conclusion that their purpose was "to help control the run-off of the rainwater from the slopes above by helping to deflect all of it to predetermined goals."[1] This theory came into being almost simultaneously with a similar one of a team of scientists of the Hebrew University (Tadmor, Evenari, Shanan and Hillel; hereafter cited as Tadmor),[2] and Glueck has generously acknowledged the priority of its work. This writer, however, feels that a distortion arises from viewing the Nabataeans or Byzantines of the Negeb as "scientific" and efficient agronomists armed with hydrological and

[1] BULLETIN 149, p. 14; 152, pp. 25-26.
[2] Tadmor, Evenari, Shanan and Hillel, *Ktavim*, Vol. 8: 1-2, pp. 127-151.

meterological data, as these latest views would have us believe. Rather, we must look at them as cultivators of marginal patches of land whose practices paralleled those in other pre-desert areas.[3] If it could be shown that similar techniques were used in other areas to increase runoff, we would feel more comfortable in accepting this latest theory. Since analogies apparently do not appear—not one, ancient or modern, is cited—rather than to accept Glueck's and Tadmor's explanation as a unique development within a small area of the Negeb, it may be well to review the evidence in detail and perhaps come to a more valid conclusion.

Before Palmer's investigations, the stone heaps which dotted the hillslopes near a number of ancient sites went unobserved or were superficially described as "flint-covered hills." Palmer observed, as he approached 'Auja (Nitsanah) from the south, that there were long regular rows of stone which had been swept together and piled into countless little black mounds. He later observed these same stone heaps at Sbeiṭa, Mishrefa, and 'Abda.[4]

Stone heaps are found on the *hammadas* in fairly close proximity to an urban site. At 'Abda, Kedar estimates that they occupy 2500 hectares (6250 acres).[5] From aerial photographs of the 'Auja area, I estimate that stone heaps of various kinds cover 240 hectares (600 acres). In the Sbeiṭa area, where they are most prominent, no estimate has been made, but they are at least as extensive as those around 'Auja. In other places, only small patches are found. Near Kh. Fuqu'a and Qossaima, for example, they do not cover more than 2 or 3 hectares.

Teleilât el-'anab are heaps or mounds of soil mixed with gravel which have been artificially formed from the material of the local *hammada*. The ratio of soil to gravel is determined by the profile of the *hammada* in which the heaps are located, but in most instances soil is present in greater quantities than gravel (Fig. 1). Three kinds of heaps can be distinguished: conical, ridge, and "flowerpot."

Conical heaps are simple mounds of stone and earth swept together so as to form cone-like figures with broad bases and gently sloping sides (Fig. 2). On aerial photographs, they appear as dark spots against a

[3] See my chapter, "The Agricultural Regime at Nessana and the Central Negeb," in the forthcoming *Excavations at Nessana*, Vol. I. Because of the interest aroused in the function of the *teleilât*, I have decided to submit my views for present publication.

[4] Palmer, *Desert of the Exodus*, pp. 367, 373, 411. Similar observations at 'Auja, Sbeiṭa-Mishrefa, and 'Abda were later made by Musil, *Arabia Petraea*, Vol. 2, p. 105, Vol. 2: 2, pp. 45, 99, 151; Woolley and Lawrence, *The Wilderness of Zin*, pp. 89, 136; Wiegand, "Sinai," *Wissenschaftliche Veröffentlichungen des deutsch-türkischen Denkmalschutz-Kommandos*, Fasc. 1, pp. 62-63, 67, 109; Lowdermilk, *Palestine, Land of Promise*, pp. 186-187; Calder, *Men Against the Desert*, p. 151; Avi-Yonah, *Zion*, Vol. 3: 2, 1952, p. 37; *Desert Research Proceedings*, 1953, p. 627; Zohary, *Israel Exploration Journal*, Vol. 4: 1, 1954, pp. 24-25; Kedar, *Bulletin of the Israel Exploration Society* (Hebrew), Vol. 20: 1-2, 1956, p. 33; Kedar, *Geographical Review*, Vol. 123: 2, 1957, pp. 184-185. Wiegand, *op. cit.*, p. 61 also reports the occurrence of these stone heaps at Umm el-Keisume, about 4 km southwest of Khalasa. I have also seen small patches of them near Kh. Fuqu'a, Qossaima (Sinai), and on aerial photographs of the Raḥeiba and Kurnub areas. Kedar, *op. cit.*, 1956, p. 33, states that they are also found near Khalasa.

[5] *Op. cit.*, 1957, p. 184.

FIG. 1. Mishrefa: Erosion at the base of a conical heap revealing profile of soil.

FIG. 2. Conical heaps near Auja (Nitsanah). Note heavy cover of pebbles.

light background.[6] The dimensions of these heaps vary: At 'Auja and Sbeiṭa I have seen them only 10 cm high and 40 cm in diameter, looking like small excrescences on the surface of the ground. Most mounds, however, range from 1.50 to 3.50 m in diameter and 25 to 50 cm in height. They are generally arranged in parallel rows 2-5 m apart. The rows seen

[6] Tadmor, *op. cit.*, Pls. 4-10, 12; Glueck, BULLETIN 152, Fig. 5.

in Fig. 2 are about 4-5 m apart and the distance between each heap within a row is 3 m. There are roughly 600 of these heaps to a hectare. Where the heaps are unusually large, running to a diameter of 6 m and a height of 1 m, they form no regular pattern and are spaced very far apart.

Ridge mounds were made by heaping soil and gravel into long strips (Fig. 3). Their appearance can only be fully appreciated on aerial photographs where they appear as closely arranged, black parallel lines. At first sight they appear to be terrace walls; however, they do not follow the contour of a slope but run down the inclines at varying angles, often in a kind of herringbone pattern. The interval between ridge mounds is greater by several meters than that between conical heaps. They are also quite low in height, so much so that they are difficult to spot on the ground. (The best view is obtained by standing at a distance or from a height.) Fairly typical dimensions for these ridge mounds are cited by Tadmor (Pl. 5): about 2.5-3 m wide at their base, 15-25 cm high, spaced 6-10 m apart. Conical and ridge mounds are often found sharing the same slope, either occupying different areas or alternating one with the other in a profusion of patterns.[7]

To the third kind of stone heap I have given the name of "flowerpot" because it closely resembles a container for earth and stone (Fig. 4).[8] These "flowerpots" are found only on very stony *hammadas* which have little or no soil cover. The "flowerpot" is generally made of an encircling wall, the stones of which are sometimes cut to a face, but most often are only rough pieces picked up from the nearby area. The space within the encircling wall contains gravel and earth not unlike that found in other heaps except that the proportion of gravel is greater. Where the walls have given way, a part of the inner fill has spilled out.

The dimensions of these "flowerpot" heaps are quite regular: about 2.50-3 m in diameter and 50 cm in height. The interval between these heaps is 15 m and more apart. They are either arranged in rows or are scattered in an irregular pattern. I estimate that there are about 50 "flowerpot" heaps to a hectare.[9]

On a number of occasions I have come across a variation of the "flowerpot" type. In the 'Abda and Sbeiṭa areas, one can see stone heaps in the shape of a rough rectangle, almost resembling a grave. On a slope of the Wadi Isderiyeh, I have found one such rectangular heap appearing very much like a double-line terrace wall, which was 5 m long, 1 m wide, and 0.50 m high. One might mistake these for graves but for the characteristic inner fill of earth and gravel.[10]

[7] Tadmor, *op. cit.*, Pls. 1, 4, 8-10, 11; Glueck, BULLETIN 152, Fig. 5.

[8] The only other recorded description of this kind of stone heap is given by Kedar, *op. cit.*, 1956, p. 32.

[9] Cf. Kedar, *op. cit.*, 1956, p. 33; 1957, p. 184, who estimates 80 to a hectare, but he does not identify the kind of heap involved.

[10] Not all stone heaps are *teleilât el-'anab*. Many heaps, particularly those made up solely of stone, can be seen scattered over the hill tops. One peculiar collection of heaps near 'Auja puzzled me until I learned that they had been piled there by the British when the road between Auja and Beersheba was being surfaced. See Woolley and Lawrence, *op. cit.*, pp. 39-41, who classify some of these heaps as

FIG. 3. Ridge mounds on a slight slope near Sbeita about 10 m apart.

FIG. 4. "Flowerpot" heaps on a slope near Sbeita.

There is a considerable amount of disagreement as to the function of these stone heaps. As a result, we have a number of theories which claim either that the heaps are in some way related to vineyards and orchards, or that they were non-agricultural in character and were built to increase the rate of erosion and runoff from the hillsides.

cairns. I have excavated a number of the "flowerpot" heaps to assure myself that they were not graves.

An explanation of the purpose of the stone heaps was first attempted by Palmer. Bedouins at 'Auja and 'Abda told him that they were "grape mounds" (*teleilât el-'anab*) or "vineyards heaps" (*rujûm el-kurûm*). Palmer therefore concluded that the areas covered by the heaps were once used for vineyards. "These sunny slopes," he states, ". . . would have been admirably adapted to the growth of grapes and the black flint surface would radiate the solar heat, while these little mounds would allow vines to trail along them and would still keep the clusters off the ground." [11]

This became the traditional explanation and succeeding investigators, Musil, Wooley and Lawrence, and Wiegand, followed Palmer's theory. Lowdermilk added that they "provided for the full absorption of rain and tended to prevent evaporation from the soil surface. Thus the roots of the vines benefited more from rainfall than they would have if planted in the usual manner." [12]

Recently, however, Calder, Avi-Yonah, Brittain, and Boyko, reflecting modern research into dew formation in arid zones, relate the function of the heaps to dew condensation and see in them a kind of device to transmute atmospheric moisture into water which in turn would nourish vines or trees planted in or near the heaps.[13] Even more recently, two theories were advanced which denied that the heaps had anything to do with vines, trees, or the condensation of dew, but were built primarily to encourage erosion or runoff. Kedar suggests that mounds were built to increase the rate of erosion from the hillsides and so hasten the formation of soil deposition in the terraced *wadis* below.[14] Tadmor, on the other hand, concludes that the conical heaps and ridges were the by-products of clearing stones from the soil-surface in order to increase local runoff from the cleared area.[15] Glueck comes to a similar conclusion, maintaining that the purpose of the heaps was to help control slope runoff by helping to deflect all of it to predetermined goals.[16]

The dew condensation theory cannot be supported for the reason that conditions necessary to condense moisture from the atmosphere—porous stones and open spaces between the stone—are not present.[17] Most heaps in the Negeb are made up of flint and limestone, and more importantly, the stone is mixed with the earth. Only the outer layer is free of soil and that is due to wind erosion (Fig. 1). Furthermore, Tadmor reports that 7 heaps, which were rebuilt during 1952/3 after the ancient model on the same site and observed for one year, neither collected dew nor did they improve the water relations of the soil below them as compared with the surrounding soil.[18]

[11] Palmer, *op. cit.*, pp. 367, 411.
[12] *Op. cit.*, p. 187.
[13] Calder, *op. cit.*, p. 51, Avi-Yonah, *op. cit.*, p. 37; Brittain, *Let There Be Bread*, p. 128; and Boyko, *Plant Ecology, Proceedings of the Montpellier Symposium*, UNESCO 5, p. 45.
[14] *Op. cit.*, 1957, p. 185.
[15] *Op. cit.*, p. 135.
[16] BULLETIN 149, p. 14.
[17] See Masson, *Bulletin de l'Institut Française d'Afrique Noire*, Vol. 10, 1948, p. 128.
[18] *Op. cit.*, p. 129.

As for Kedar's soil-erosion theory, Tadmor presents nine reasons, with which I am in complete agreement, why his view is untenable.[19] The primary fallacy in Kedar's theory is the assumption that *wadis* in antiquity had no soil-beds and that the ancient farmer had to build them up artificially. There is no evidence to support this hypothesis, the likelihood being that had there been no soil, the ancients would not have attempted to cultivate the area.

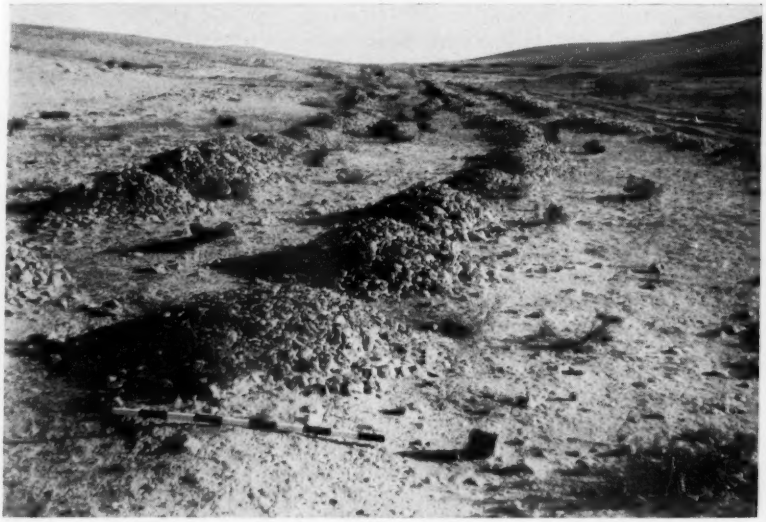

FIG. 5. Three lines of conical heaps running parallel to the Wadi Isderiyeh.

Tadmor's efficient-runoff theory has several disadvantages. Foremost is the keystone on which the theory rests, namely that the ancient farmer in the Negeb knew " that in a cleared area the pounding action of raindrops forms a loessial crust which seals the soil surface, decreases the infiltration rate, and increases the surface runoff." [20] We are to believe that the ancients neatly cleaned or swept their slopes so as to produce a clean surface of soil which then could form a sealing crust. The magnitude of this task is enormous, not to say impossible, as one can see on Fig. 2 and on Tadmor's Pl. 2. Furthermore, since these stones do not merely lie on the surface of the ground but are found throughout the soil profile, it would be impossible in most areas to produce a clear surface. Where the stone cover is heavy, stone underlies stone and picking them up would produce pits on the ground surface which would then have had to be filled and smoothed over. Finally, the theory does not take into account the " flowerpot " heaps found on slopes with little or

[19] *Op. cit.*, pp. 133 f.
[20] *Op. cit.*, p. 132.

no soil cover, nor the great variety of patterns. Tadmor admits that the difference in the purpose of ridges and conical heaps is "somewhat obscure." [21]

Glueck's controlled-runoff theory is equally untenable in view of the fact that it does not explain the purpose of conical or "flowerpot" heaps which could in no way deflect water to predetermined goals. To the contrary, they would obstruct the flow of water. The theory also offers no explanation for the variety of stone-heap patterns, and for some heaps being as much as 1 m high.

Both Glueck and Kedar state that stone heaps are invariably found on the slopes.[22] However, in one *wadi*, a tributary of the Isderiyeh and quite near the Beersheba-'Auja road, I have come across three long irregular rows of conical heaps which skirted the outer edge of the terraced soil-beds and which ran parallel to the course of the *wadi* (Fig. 5). These heaps are spaced 1 m and less apart and were well within the enclosure or lateral wall; they could not serve to conduct runoff or soil to the *wadi*-bed, which is about a meter or so away from the heaps.

There remains Palmer's original theory—to which I am strongly attracted—that the heaps are evidence of ancient vineyards. Like Palmer, I questioned Bedouins about the heaps and, remarkably enough, the tradition still remained: they were used for vines. The Bedouins believe that dew on the stones provide moisture and that stones keep the plants cool. The latter point was illustrated by plucking a stone from the ground and showing me how cool its underpart was.[23] However, it must be noted that Bedouins do not plant their vines, the few that they do plant, on the *hammada*-covered slopes, but in *wadi*-bottoms.

The vine-heap theory has two drawbacks which must be explained away before it can be considered valid: lack of water and poor soil conditions. Neither vines, nor any other cultivated crop can survive in the Central Negeb on direct rainfall alone. If vines or trees were planted on the slopes, a supply of water must have been available which would have supplemented direct rainfall. A common practice, ancient and modern, is to collect additional supplies of water by directing slope runoff into cisterns, and many of these ancient receptacles are found in the areas covered with stone heaps.[24] Tadmor assumes that the water stored in these cisterns was used for drinking water,[25] but I see no need to eliminate the possibility of their having been used to store water for irrigation purposes inasmuch as we find a great number of these cisterns in stone-heap areas where there is no sign of habitation. More importantly, we know from P. Colt 32 that vines and trees located in a "fig-vineyard" were irrigated from a cistern, a well-known practice in the Mediterranean region.[26]

[21] *Op. cit.*, p. 134.

[22] Glueck, BULLETIN 149, p. 12; Kedar, *op. cit.*, 1957, p. 184.

[23] See Vergil, *Georg.*, 2, 350-353 and Columella, *R. R.* 3, 11 for similar observations.

[24] See also Crawford who cites a letter of Woolley, *Antiquity*, Vol. 28: 112, 1954, p. 207; Tadmor, *op. cit.*, pp. 130, 131, 135.

[25] *Op. cit.*, p. 135.

[26] P. Colt: Kraemer, *Excavations at Nessana*, Vol. 3, 1958. For Palestine, see *Ezekiel* 19, 10; for Egypt, Schnebel, *Die Landwirtschaft in hellenistischen Ägypten*,

As for the *teleilât*, we must not think of their being used primarily as vine props. We must *not*, above all, think that vines were planted *within* the mounds, but rather in pits or trenches.[27] In other words, the conical heaps and ridge mounds came about as a result of digging holes into the ground in which vines, and in some cases trees, were planted. Over the years, the action of the elements has filled up the excavations. This is exactly the situation which Bradford found in Apulia: "The air photographs showed rows of Roman vine trenches and tree pits . . . There they stood out as miniature banks and mounds, respectively only 9 to 12 inches (22-30 cm) high. The roots of the small weeds which flourished above them had bound the surface soil and retained it when elsewhere this had been eroded by wind, rain, etc." [28]

Aside from enabling the farmer to cultivate his vines properly, each basin or trench, which could easily have been partitioned into a series of basins, would hold winter rains and irrigation water near the roots.[29] A modern analogy in the Negeb can also be cited. When the workers at Ashalim, near Kh. Fuqu'a, planted eucalyptus trees on the hilltop of their settlement, they dug pits into the *hammada*, placing the stone on one side of the excavation. As a result, a pattern of *teleilât*, not unlike the ancient kind, evolved (Fig. 6). The saplings in each pit were, of course, hand-irrigated, the pit holding a quantity of water near the root zone.

In addition to hand-irrigating the vines from water stored in cisterns, it was also possible to run small channels on an oblique line from pit to pit, or from trench to trench, which would catch a portion of the slope runoff during the rainy season and direct it into the basins. It is for this reason, I believe, that one never finds ridge mounds following the contour of a slope but running down it; if they had been raised along the

pp. 273-274; for the general practice in antiquity, Pliny, *N. H.*, 17, 39-41 and Billiard, *La vigne dans l'antiquité*, pp. 343-344.

[27] Of all the agricultural practices in antiquity, particular attention was paid to working of the soil in vineyards and orchards. One operation, *ablaqueatio* or *γύρωσις*, requires that a trench or ditch be dug around the base of a vine or tree *velut lacus efficere* (Palladius 2, 1 and Isidorus, *Orig.*, 17, 5; *lacusculus* in Columella, *R. R.*, 4, 8, 3). Billiard, *op. cit.*, p. 327 cites this as one of the fundamental practices of viticulture for young and old plants alike. Crawford, *op. cit.*, p. 207, finds a parallel between the stone heaps in the Negeb and those he has seen in other areas: "The German examples which I have seen, consist of broad cairns running up and down the slopes upon which vines grow. In Franconia they are called *Stein-rotteln* and the ones I tried to photograph were between Angstetten and Bieberehren on the slopes of the Taube valley. I have also observed . . . them in the Caucasus, on the south side of the watershed . . . The Franconian *Stein-rotteln* were explained, not as made for vines to grow upon but as formed from the stones dug out of the holes where the vines were planted and picked up from the surface around." Crawford concludes that the *teleilât* were used as vine props, but in the water-scarce Negeb it is more likely that the ancient farmer was far more interested in a catch basin for water rather than a prop for his vines. See also *Bowen, Archaeological Discoveries in South Arabia*, pp. 60-61, for his explanation of the mysterious mud circles.

[28] *Antiquity*, Vol. 24: 93, 1950, p. 90.

[29] For this practice in Tunisia where the only irrigation, hand watering, is applied to young olive trees in order to establish them during the first one or two summers' growth, see Kearney, *U. S. Dept. of Agric. Bulletin*, No. 86, 1905, pp. 26-27.

contour, runoff would have been denied to the areas below. Furthermore, because of the heavy downpours which often occur in this region, excess runoff could have been trapped at the base of a slope and channeled into a cistern where it was stored for later use or directed into the terraced fields.

FIG. 6. Modern "*teleilât*" on hilltop at Ashalim. A sapling is planted in center of pit near stick.

A somewhat similar method of irrigation was used by a Bedouin near 'Auja for watering his vine. On one of the silt banks of the Wadi Ḥafir, a Bedouin farmer had dug a pit about 2 m in diameter and 15-20 cm deep in which he had planted a vine, protected with barbed wire. He had then cut a long thin runnel into the silt-bed, flat though it was, and its runoff was directed into the basin.

The soils of the *hammadas* have questionable agricultural value, but we must recognize that these soils are being judged from a modern point of view. In Apulia, for example, Bradford discovered evidence for vineyards in a region in which a previous investigator had found the subsoil impenetrable to the roots of trees and useless for orchards and vineyards.[30] The ancient Italian farmer, however, had gone so far as to cut one cubic meter of stone out of the living rock (*sic*!) in order to create a container for his vine or tree.[31] In the Negeb, the ancient farmer did not go to this extreme, but I believe that he planted vines and trees on land which to us would be considered sub-marginal, and on the stony

[30] *Antiquity*, Vol. 23: 90, 1949, p. 70.
[31] *Op. cit.*, 1950, p. 90.

slopes with little or no soil cover, he built his " flowerpot " heaps so that an ordinarily sterile area could be put to some agricultural use.

A vine (i. e. *Vitis vinifera*), apart from being more highly drought-resistant than most fruits, is remarkably adaptable for growth in almost any kind of soil. The same may also be said of the olive and fig. Once the problem of assuring vines a reliable supply of water is met, the *hammada* soils, while not the best, can support their growth. Tadmor, however, considers these soils unsuitable for any agricultural crop because they are too saline, extremely gravelly or marly, or highly calcareous.[32]

As for salinity, all soils in the Negeb are saline to some degree if they receive direct rainfall only. But if supplemental supplies of water are added, salts can be leached out making the soil suitable for cultivation.[33] Leaching would only be necessary in the area of the root zone and would be facilitated by localizing the application of water to a basin in which the vine was planted. Furthermore, vines are moderately tolerant of salts, as are also olive, fig, and almond trees.[34]

With respect to *hammada* soils being excessively gravelly, marly or calcareous, vines are known to thrive in what would appear to us as an impossible environment. Portes and Russyen cite an outstanding vintage grape which grows in a soil composed of 71 per cent of stone. They further generalize, " humide ou non, tout terrain de vigne se trouve bien d'être melangé de pierres et surtout de cailloux . . . c'est une verité reconnue de tout temps . . ." [35]

Viala and Ravaz find the Old World species *Vitis vinifera*, unlike the American (*Vitis labrusca*), most resistant to the chlorosis which is caused by calcareous soils; it " succeeds well in soils of every class, from the most siliceous to the most calcareous." [36] Portes and Russyen state that the soils which produce the renowned wines of Andalusia are composed of 68 per cent calcium carbonate.[37] I have also corresponded with N. Shaulis, Professor of Pomology for the New York State Agricultural Experiment Station, who writes that it is possible to grow grape vines (*V. vinifera*) in soil whose marl or calcium carbonate content would be in the order of 50 to 70 per cent. We must also bear in mind that our authorities deal primarily with soils of active wine-producing regions and not with such marginal lands as we have in the Negeb. Hence, I would not exclude the possibility of growing vines in soils which exceed the above figures in gravel, marl, or calcium carbonate content, even though their yields probably would not match those in more favorable areas.

Our view is further supported by the purely visual aspect of the heaps: the various patterns of conical heaps and ridge mounds arranged in close

[32] *Op. cit.*, p. 128. Cf. Boyko, *op. cit.*, p. 45, a plant ecologist, who apparently finds no objection to the quality of these soils.

[33] For a similar technique of leaching saline soils in antiquity, see Billiard, *op. cit.*, p. 250.

[34] *Soils: The Yearbook of Agriculture*, 1957, p. 709.

[35] *Traité de la vigne et de scs produits*, Vol. I, p. 529.

[36] *American Vines* (*Resistant Stock*), trans. by Dubois and Twight, p. 115.

[37] *Op. cit.*, p. 861.

order have the very appearance of a living vineyard.[38] The similarity between the vineyards of the Negeb and those discovered by Bradford on aerial photographs of Apulia is most striking and cannot be cast aside.[39]

The space between stone heaps is also an important factor in determining their function. The interval between most conical heaps is about 3 m, between ridge mounds 6-10 m, between "flowerpot" heaps, 15 m and more. We have already pointed out that "flowerpot" heaps were probably built in order to put virtually sterile slopes to some agricultural use. I believe that vines were planted in the soil and gravel fill of these heaps and that they were hand-irrigated. We must note that there are only about 50 of these heaps to a hectare as against 600 per hectare for conical heaps. The task of building and filling these heaps, and the certainty that vines planted in them had to be completely hand irrigated, undoubtedly made it advisable to build fewer of them.

In other areas where soil cover was much deeper, we note that the heaps are much closer together, averaging about 600 per hectare. The interval between most mounds would preclude the possibility of anything having been planted other than vines. Ancient authorities, as well as modern practice, call for vines to be planted in rows about 1-3 m apart, depending on the character of the soil.[40] However, it is axiomatic that vines should be planted farther apart where the soil is more shallow and drier and the climate hotter and drier.[41] The deciding factor is the available water supply and its loss through evaporation. The same would be true of trees (olive and fig), where we could expect an interval of at least 17 m.[42]

Assuming that each conical heap represent one vine, the average number per hectare would be about 600. When compared with the 1,897 per hectare planted in Italy in bad terrain and poor soil,[43] it can be seen that the ancient farmer of the Negeb took into account both climate and soil.

We may also attempt to explain the appearance of large conical heaps which are spaced far apart. Through the Mediterranean it is a common

[38] Cf. the simile used by Vergil, *Georg.*, 2, 279-281.

[39] Bradford, *op. cit.*, 1950, Pls. III, V. Other analogies, not as distinct as those cited above, can also be given. At the foot of Mesa Sbet in Eastern Palestine, Musil, *Palmyrena*, p. 200, found evidence of ancient vineyards in numerous low walls on the hillside and innumerable heaps of basalt. At Kasr Rabba, Tristram, *The Land of Moab*, p. 133, describes traces of vineyards in the long naked lines of stone. For the general practice in Palestine, Handcock, *Dict. of the Apostolic Church*, Vol. 2, p. 639, states: "In very stony soils parallel ridges are made up of loose stones, and the vines are planted near the side of one or another of these ridges. The shoots are trained up these primitively constructed walls, carried over the top, and brought down to the other side by stones attached to them." See also Wiegand, *op. cit.*, p. 63, who cites analogies for stone-heaps in the vineyards of Greece, Lebanon, Syria, and Germany.

[40] Billiard, *op. cit.*, pp. 298-299.

[41] Perold, *Treatise on Viticulture*, pp. 542-543.

[42] Cf. Kearney, *op. cit.*, pp. 14, 22, for modern dry-land cultivation practices in Tunisia.

[43] Billiard, *op. cit.*, p. 300.

practice to interplant vines with olive and fig trees.[44] In Palestine, the practice is known from biblical times to the present.[45] In the Negeb specifically, we have evidence on it in the term συκαμπελών (P. Colt 32, 9-10). Although the word is unattested elsewhere, it obviously means "fig-vineyard," i. e. a vineyard in which fig trees were planted among vines.

The large conical heaps are, I believe, evidence that an occasional tree was planted among vines. Water requirements for fruit trees exceed that of vines and hence the basin in which the trees were planted had to be deeper and larger in diameter than those used for vines. Excavations over a period of years naturally resulted in high heaps after erosion. Judging from the scanty number of these large heaps, the likelihood is that very few trees were planted on the slopes and that the majority of them were planted in *wadi*-bottoms where a greater supply of water was available. We must exclude the possibility of the date palm, because of its water requirements, and consider only the olive, fig, almond, or pomegranate as having a chance to succeed in *hammada* soils.

In sum, our interpretation of the evidence leads us to believe that the *teleilât el-'anab* or *rujûm el kurûm* are well-named; that, based on known viticultural practices in the Mediterranean region and in Europe, the conical and ridge heaps are the result of digging pits and trenches in which vines and an occasional tree were planted. The heaps themselves may or may not have been used as vine props. We also believe that the "flowerpot" heaps were used for the cultivation of vines and perhaps even for trees.[46]

[44] See Cato, *R. R.*, 50, 2; Pliny, *N. H.*, 17, 89-90; Columella, *R. R.*, 3, 21, 11; Schnebel, *op. cit.*, pp. 253-254.

[45] I *Kings* 4, 25; *Luke* 13, 6; Grasovsky and Weitz, *Govt. of Palestine, Dept. of Agr. and For., Agric. Leaflets*, Series 4: 29, 1932, p. 7.

[46] If our view is correct, it would appear that viticulture played an important part in the agricultural economy of the inhabitants of the Negeb—not merely for home production and for sale to passing caravans, but for possible export as well. (For vineyards in the Nessana documents, see P. Colt **16, 31, 32, 34, 97.**) We know that Gaza was linked to the Negeb administratively and commercially, and was a commercial hub, the port of the desert, through all periods of antiquity. Moreover, the evidence for its being a wine center appears to coincide with the period of greatest development in the Negeb, the fourth to seventh centuries A. D., the period during which agricultural exploitation of the region was undoubtedly at its peak.

The *Totius Orbis Descriptio*, 29 (IV cent.) informs us that Gaza was the center of wine trade for Egypt and Syria; Marcus Diaconus *Vit. Porph.*, 58 (late IV cent.) states that there was a colony of Egyptian wine dealers at Maioumas, the port of Gaza. Isidorus *Orig.*, 20, 3, 7, Fl. Cresconius Corippus *de laud. Just. Aug.*, 3, 88, Gregorius Turonensis, *Hist. France.*, 7, 29, Magnus Aurelius Cassiodorus, *Var.*, 12, 12, and Sidonius Apollonaris *Carm.*, 17, 15, all writing between the late fifth and seventh centuries, make conspicuous mention of Gaza wine, *Gazetum* and *Gazetinum*. The fact that the latter are occidental writers attests that Gaza wine was exported and well-known in the western part of the Roman Empire. Before this time it does not seem to have been popular. It is significant that Pliny *N. H.*, 14, 53-98 makes no mention of Gaza wine in his list of foreign and domestic wines.

The connection between the wines of Gaza and the vineyards of the Negeb appears virtually certain (Cf. Stark, *Gaza und die philistäische Küste*, p. 561: "Der Weinbau . . . erstreckte er sich von Gaza aus über das ganze Grenzland nach Bersaba hinauf, sowie an der Küste nach Rhinocorura zu; es spielen in dem Leben der durch Hilarion hier errichteten Klöster die *vindemiae* eine grosse Rolle). That

THE SHEKEL SIGN ON STONE WEIGHTS

R. B. Y. Scott

Among the stone weights which have come to light from time to time in Palestine are those marked with a sign resembling the figure "8" with one of its loops open.[1] In earlier publications (Guthe,[2] Macalister,[3] Benzinger[4]) the symbol was printed or illustrated with the open loop at the bottom and a numerical mark to the right. More recently it has been shown with the open loop uppermost, and the numerical mark to the left (Tufnell,[5] Diringer,[6] Moscati,[7] Trinquet,[8] Barrois[9]). The numerical marks indicate the unit and multiples of 2, 4, and 8. The unit indicated by seventeen examples[10] is in the range 11.08-12.89 gm., averaging 11.53 gm. If two abnormally large examples weighing over 12 gm. be omitted, the average weight of the remaining fifteen is 11.39 gm. This is very close to the 11.41 gm. value for the shekel derived from an uninscribed weight of 4565 gm. found at Tell Beit Mirsim, which Albright takes to represent 8 minas = 400 shekels.[11] Many other uninscribed weights yield a similar value for the unit and its multiples. It is generally agreed that the unit represented by the open-looped figure "8" the shekel, in particular the official or "royal" shekel, since in one instance it is replaced by the word *lmlk*.[12]

there was traffic in agricultural produce between farmers of the Negeb and outside interests is attested by P. Colt 90 and 91, two long and complex accounts which record the daily sale of dates to purchasers whose names are clearly Egyptian. The day and month of the sales, unlike other Nessana economic documents, are according to the Egyptian calendar. Judging by the short interval between sales to the same purchasers, it can be assumed that most of the buyers were engaged in making hauls within a radius of 50-60 miles of Nessana. This would make Gaza, not Egypt, the most likely place for the disposal of their purchases (Kraemer *op. cit.*, p. 270). Lowe, *Middle East Supply Center Agric. Rep.* No. 6, p. 32, also informs us that "Gaza" barley, famous in recent times as a malting barley, came to Gaza from the Bedouin farmers in the Negeb. In the same way, vintage grapes or wine produced at Nessana and other towns of the Negeb could have been sold to Egyptian merchants, if not to the colony of Egyptian wine dealers at Maioumas mentioned by Marcus Diaconus.

[1] Cf. Fig. 1.

[2] H. Guthe, *ZDPV*, 1882, Plate X.

[3] R. A. S. Macalister, *Gezer II*, pp. 285-87.

[4] I. Benzinger, *Hebräische Archäologie*, 3rd ed., p. 196.

[5] O. Tufnell, *Lachish III*, Plate 51.

[6] D. Diringer, *Le iscrizioni antico-ebraiche palestinesi*, pp. 284 f., 291, and Plate XXIV; "Early Hebrew Weights found at Lachish," *PEQ*, 1942-43, pp. 91-97 and Plate XIII.

[7] S. Moscati, *L'epigrafia ebraica antica*, Plate XXV.

[8] J. Trinquet, "Métrologie biblique," *Dictionnaire de la Bible, Supplément*, Fasc. XXVIII, col. 1246.

[9] A.-G. Barrois, *Manuel d'archéologie biblique*, Vol. II, p. 256.

[10] Ten listed by Macalister, *op. cit.*, p. 287; six found at Tell ed-Duweir and published in Tufnell, *op. cit.*, Plate 51; one found by Pritchard at el Jib.

[11] W. F. Albright, *Excavation of Tell Beit Mirsim, III: The Iron Age*, § 44; *Annual* XXI-XXII.

[12] A two-shekel weight listed by Macalister, *op. cit.*, p. 283, along with a two-shekel weight having the shekel symbol.

No convincing explanation of the origin of the shekel symbol has been proposed. Diringer quickly disposes of Petrie's guesses that it was an abbreviation either of the Greek *οὐγκία* (ounce), or of a Persian weight assumed by Petrie to have been named *khoirīnē* (cowry shell).[13] It seems to the writer more likely that the shekel symbol is a conventionalized representation of the Hebrew *ṣᵉrôr*, the tied bag or bundle in which lump silver and sometimes other valuables were carried.[14] Usually

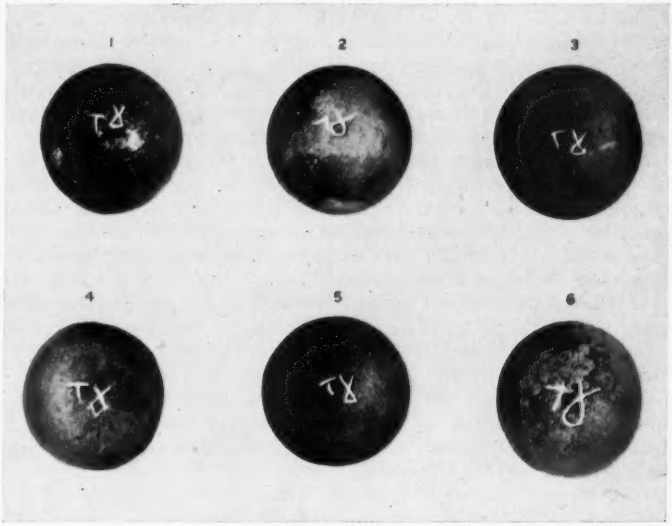

FIG. 1. The shekel sign and numerical marks on weights from Tell ed-Duweir. (From O. Tufnell, *Lachish III; the Iron Age*, Plate 51. Copyright: By permission of the Trustees of the late Sir Henry S. Wellcome.)

the lower and complete loop is circular, as the bundle would appear when suspended. Two examples from Lachish which have a straight horizontal line at the bottom may be intended to picture it resting on a level surface, though more probably this is due simply to the lapidary's difficulty in cutting a curved line.

It is clear from the derivation and use of the word *ṣᵉrôr* that it was a receptacle made by wrapping and tying something in cloth or other material so as to form a bundle. The metaphorical use in I Sam. 25:29—"wrapped, tied up (together) in the bundle of life"—is paralleled in Ex. 12:34 and Prov. 30:4 by the wrapping of something in a garment, in

[13] D. Diringer, *PEQ*, 1942-43, pp. 93f.

[14] Silver—Gen. 42:35 (bis); Hag. 1:6; Prov. 7:20; (powdered) myrrh—Song of S. 1:13. Metaphorical references to the *ṣᵉrôr* are found in I Sam. 25:29 and Job 14:17. [Note that the symbol is identical in form with Egyptian hieroglyphic *and* hieratic *šs*—W. F. A.]

the former instance specifically for carrying over the shoulder. Isaiah's scroll of testimony was wrapped up[15] and sealed, and similarly a *ṣᵉrôr* was sometimes sealed (Job. 14:17). That it was first tied is obvious; in fact this would be a convenience when it was being carried, and necessary when it was rested on a surface if it was not to fall open. On all counts the shekel sign suggests a graphic representation of the *ṣᵉrôr*.

There is one possible objection. If this be the origin of the symbol, it is curious that stone weights are not said to have been carried in a *ṣᵉrôr* but in a *kîs*, or purse,[16] whereas on the other hand silver to be weighed as money was carried in a *ṣᵉrôr* or in a *ḥārîṭ*,[17] never in a *kîs*. However, this is not strange after all when one reflects that the purpose of marking the weights was to indicate that they were standards for weighing the contents of a *ṣᵉrôr*, notably monetary silver.[18] Where they were kept when not actually in use is irrelevant; what mattered was that they could be seen to represent the official standard when value was being determined by weight. Furthermore, the *ṣᵉrôr* was necessarily adjustable in size, because the amount of lump silver to be carried might be small or great, and would vary. On the other hand, the standard weights would not normally vary in number and size. A set of four stone weights—the only ones bearing the shekel symbol are 1, 2, 4 and 8 shekel weights—would have a total weight of only 171 gm. or 5½ oz., and could be kept in a small purse. The only other thing said to have been kept in a *kîs* is gold (Isa. 46:6), and here again the quantity owned by an individual would be small.

It would seem, then, that the shekel symbol pictured a money bag because the principal use of these small weights was to value the silver used in day-to-day transactions of individuals. The still smaller weights *p-y-m*,[19] *beqaʿ*,[20] *šālîš*[21] and *rebaʿ*[22] were respectively ⅔, ½, ⅓ and ¼ of the shekel, and doubtless these also would belong to the set of weights kept in the *kîs*. Presumably they were used for amounts up to 15 shekels (1 + 2 + 4 + 8); it is to be noted that the M. T. in Ezek. 45:12 appears to refer to heavier weights representing 15, 20 and 25 shekels (Ezekiel here introduces the post-exilic mina of 60 shekels @ 20 gerahs to the shekel, in place of the pre-exilic mina of 50 shekels @ 24 gerahs). For

[15] Like the scrolls in Qumran Cave I; cf. Isa. 8:16.

[16] Deut. 25:13; Mic. 6:11; Prov. 16:11.

[17] The *ḥārîṭ* is mentioned only twice; it seems to have been a large leather bag. In II Kings 5:23 it was large enough to hold a talent of silver (about 63 lbs. avdp.). In Isa. 3:22 it is apparently a woman's handbag.

[18] Gen. 23:16; Isa. 46:6; Jer. 32:9-10; Zech. 11:12; Job 28:15.

[19] I Sam. 13:21. Four weights so inscribed are listed by Diringer, and three more by Moscati.

[20] Gen. 24:22; Ex. 38:26. Four examples in Diringer, and three more (one bearing only the initial *b*) in Moscati.

[21] I Sam. 13:21. The *šālîš* weights were too small to be easily inscribed. The "double v" mark on one example from Gezer (cf. Macalister, *op. cit.*, p. 283) and on three examples from Tell ed-Duweir (cf. Tufnell, *op. cit.*, Plate 51), may be intended for the initial *š*, since three of these four weigh just ⅓ the standard shekel; or it may mean "⅔."

[22] I Sam. 9:8. The one example noted by Diringer and a second listed by Moscati weigh just under ¼ the standard shekel.

larger weights the half mina, mina, and its multiples would be used. Since even a half mina weighed ⅝ lb. avoirdupois, these larger weights would be kept on a shelf rather than carried in a *kîs*. The shekel, however, was the standard, and it is noteworthy how often the larger sums of shekels mentioned in the O. T. are in multiples of fifty;[23] they were measured, that is, with mina weights but reckoned in shekels.

A SEAL WEIGHT FROM NEBI RUBIN

Nelson Glueck

One day in August, 1958, the writer, together with some friends, was examining the very large ancient site of Nebī Rūbîn, overlooking the Mediterranean between Tel Aviv and Ascalon. One of the group, Mrs. Jim Clore, espied a small, smooth, gleaming white stone, which she picked up and handed to me. It was one of the flat-topped, dome-shaped, limestone weights familiar from various excavations in Palestine. (Nebī Rūbîn is located at coördinate 121.5-143.8.)

Weights of this type have been found at Beth-Zur,[1] Gerar,[2] Gezer,[3] Lachish,[4] Ophel,[5] and Tell Zakarîyeh.[6] A marked stone weight of this kind was encountered at Gibeon,[7] and a pottery one at Tell Zakarîyeh.[8] Some have been found without any weight values whatsoever marked on them.[9]

The sign on the marked weights of this particular type looks like a two-pronged metal paper clip, whose ends have been crossed over each other to form a " v " sign, often inverted, with a more or less triangularly shaped eyelet at the bottom of the " v." The origin and clear meaning of this sign are still undetermined, although it seems definitely to indicate the equivalent of a shekel in weight.[10] This unit sign is always accompanied by one vertical stroke, or two parallel vertical strokes, or combinations of strokes that indicate, respectively, multiples of 1, 2, 4, 8 and so on. This sign with a single vertical stroke, indicates an average

[23] Cf. Gen. 23: 15-16; Ex. 30: 24; Lev. 27: 3, 16; Josh. 7: 21; I Sam. 17: 5, 7; II Sam. 14: 26; 24: 24; II Kings 15: 20; II Chron. 3: 9.

[1] Sellers, *The Citadel of Beth-Zur*, p. 60, Fig. 53: 1-4; 54.

[2] Petrie, *Ancient Weights and Measures*, p. 45 and Pl. LII; LIII; Duncan, *Digging Up Biblical History*, Vol. II, p. 217.

[3] Macalister, *The Excavation of Gezer*, Vol. II, p. 285, Fig. 432.

[4] Diringer in *Lachish III*, Pl. 51: 1-6.

[5] Duncan, *op. cit.*, p. 219.

[6] Bliss and Macalister: *Excavations in Palestine*, pp. 145-146.

[7] Pritchard, *The Ancient Near East, An Anthology of Texts and Pictures*, Fig. 24; *Hebrew Inscriptions and Stamps from Gibeon*, pp. 29f., and Fig. 12:6, 7.

[8] Bliss and Macalister, *loc. cit.*; Duncan, *op. cit.*, p. 219.

[9] Sellers, *op. cit.*, p. 63, Fig. 58.

[10] Cf. Diringer, *op. cit.*, p. 352; Benzinger, *Hebräische Archäologie*, ed. 3, p. 196; Barrois, *Manuel d'archéologie biblique*, II, p. 256; Duncan, *op. cit.*, pp. 217-219; Bliss and Macalister, *op. cit.*, pp. 145-146.

value of 11 grams or about a shekel, as estimated from weighing each weight thus marked.[10a]

It has also generally been agreed that this class of weights is to be dated to the Persian and Hellenistic periods, to judge from the levels of the excavations in which they have been found.[11] With this dating, the Nebī Rūbîn weight would seem to be in accord, because as our somewhat cursory examination of the surface remains on this tremendous site showed, there was nothing earlier. The main periods of occupation seem to extend from Hellenistic through Byzantine.

FIG. 1. Top of Nebī Rūbîn seal-weight with double unit weight marks and inscription in retrograde of name of owner, reading: *lbrky*, "belonging to Berekay."

The unit sign on the Nebī Rūbîn weight is followed by two vertical strokes, which means that it should weigh about 22 grams, if it corresponded with others like it. Actually, its exact weight turns out to be 21.894 grams. The craftsman who shaped it did a tiny bit too much chiseling at the bottom of it to make it conform to the proper standard. The chisel marks are very clearly visible. I imagine that every one of the similarly marked, dome-shaped, limestone weights differs by some fraction of a tenth of a gram, slightly more or slightly less, from all the others of the same kind. When they were made, there were no supersensitive analytical balances capable of registering differences of a

[10a] Cf., however, Pritchard, *Hebrew Inscriptions*, p. 30.
[11] Diringer, *op. cit.*, p. 352; Macalister, *op. cit.*, p. 280; Barrois, *loc. cit.*

thousandth of a gram or less such as the one I used to determine the exact quantity of the Nebī Rūbîn weight.

This particular Nebī Rūbîn weight is, furthermore, absolutely unique, so far as my knowledge goes, in that it is the only one of its kind bearing the name of its owner. On only one other similar weight is there an

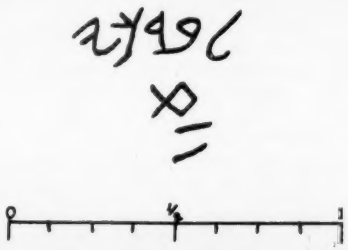

FIG. 2. Copy of impression of retrograde inscription on Nebī Rūbîn seal-weight, enlarged twofold.

FIG. 3. Left: Bottom of seal-weight from Nebī Rūbîn, showing chisel marks made in attempt to have it conform to exact weight. Right: Profile view of same seal-weight. (Photographs 1:1.)

inscription. It is a bronze weight from Gezer, which, however, lacks the unit sign, but does have two vertical strokes, and weighs 22.289 grams.[12] Next to the two strokes are incised the ancient Hebrew consonants, equivalent to *l m l k*, "belonging to the king."

On the Nebī Rūbîn weight, however, not only is there the familiar unit sign, followed by two vertical strokes, but they are located at right angle

[12] Macalister, *The Excavation of Gezer*, II, p. 285, Fig. 433.

to a horizontal inscription, incised in sharply defined, retrograde, ancient Hebrew characters, which read *l b r k y*, as "belonging to Berekay."

It would seem that this Nebī Rūbîn weight could also have served as a seal, it being possible to use it to impress on wax or other material the owner's name right side up. It could therefore perhaps best be designated as a seal-weight, capable of fulfilling two functions, because otherwise it would have made no sense to incise the owner's name in retrograde. This feature heightens the uniqueness of this seal-weight, in contradistinction to the known, normally written, inscribed weights, such as the *l m l k* one from Gezer, referred to above, and the earlier, Iron II *b q'*, *n ṣ f* and *p y m* ones.[13]

The name "Berechyah" or "Berechyahu" (here shortened to *Berekay*) occurs fairly frequently in the Bible, being written, for instance, as "Berechyahu" in I Chron. 15:17 and as "Berechyah" in I Chron. 15:23. It usually applies to men of the post-exilic period, as in Zech. 1:1.7; Neh. 3:4.30; I Chron. 3:20; 9:16. This would be in conformity with the probably Persian-Hellenistic date of the Nebī Rūbîn weight, with which its actual script, too, is in accord. The other references in I Chron. 6:24; 15:17.23 and II Chron. 28:12 occur in passages of post-exilic redaction. That does not mean, however, as indicated by II Chron. 28:12, that the name was not used in pre-exilic times, as well.

SOME RECENT BOOKS ON BIBLICAL GEOGRAPHY, ARCHAEOLOGY, HISTORY AND LITERATURE

Again the Editor must plead guilty to falling sadly behind in his book notices. However, the quality of currently received papers is so good that the BULLETIN has not suffered in the least from this omission, which will be made good in future numbers.

Books on Geography. There has been a great increase in the number of books in this general field, which often includes history and archaeology as well as geography in the narrow sense. Fathers **Paulin Lemaire** and **Donato Baldi** have published *Atlante Storico della Bibbia* ("Historical Atlas of the Bible"), which appeared in Italy (no city mentioned, Marietti Editori, 1955, 13½ by 10 inches, 322 pp. + 13 maps, price 12,000 lire—but worth it). With hundreds of illustrations in the text, the book is well grounded in the ancient Orient as well as in archaeology, geography and topography; it may be highly recommended.

Another excellent book of the same type, published originally by Rev. **Luc H. Grollenberg, O. P.**, in Dutch, has now appeared in French and English. The former has been translated by **René Beaupère, O. P.**, and prefaced by **Roland de Vaux, O. P.** (*Atlas de la Bible*, Elsevier, Paris-Bruxelles, 1955, 14½ by 10½ inches, 158 pp. including 408 photographs, with numerous plans and drawings, as well as 37 maps in color. The latter has appeared as *The Atlas of the Bible*, with foreword by **H. H. Rowley** and the undersigned; with the same illustrations, it is published by Thomas Nelson & Sons and sells in this country for $15.00.

Two other books of this general type have appeared in this country lately. First appeared **Emil G. Kraeling's** *Rand McNally Bible Atlas* (Chicago, Rand & McNally Co., 1956, large 8vo, in two columns, 487 pp. including 40 pp. of colored maps, as well as a great many photographs, maps, and plans $8.95). This is a very learned

[13] Sellers, *op. cit.*, p. 60; Diringer, *op. cit.*, p. 349; Pritchard, *op. cit.*, Fig. 23.

compilation, emphasizing historical and literary data; it is a pity that the publishers could not have included a few references to the extensive literature on the subject, but one can see their point of view.—**Denis Baly's** *The Geography of the Bible* (New York, Harper, 1957, 8vo, xiv + 303 pp., with two large colored maps, 97 photographs and 47 maps and diagrams in the text, $4.95) is different from all other recent publications in being based on modern scientific geography throughout. It combines adequate treatment of both physical and human geography with an intimate knowledge of the land itself, where the author spent some fifteen years. Both geomorphology and modern ecology are well presented. On the other hand, there is little archaeology, and the book might have benefited greatly from utilization of the epoch-making Israeli publications in the field where archaeology and geography have gone hand in hand.

Books on Archaeology. Out of the wealth of material received, we pick out a few items for inclusion at this time. Easily first comes the very remarkable volume, *The Holy Land: New Light on the Prehistory and Early History of Israel* (= *Antiquity and Survival*, II, Nos. 2/3, 1957, 317 pp. in two columns, ca. 8½ by 8½ inches, with a great many photo-offset cuts, mostly of high quality: the subscription to the volume is only $6.50). It contains a superb collection of up-to-date articles and reports by Israeli archaeologists and others who are actually working in Israel. Selecting names of contributors would be invidious, so we shall limit ourselves to stressing its unique importance for all students of the past of the Holy Land.

L'Ancien Testament et l'Orient: Etudes presentées aux VIes Journées Bibliques de Louvain (11-13 Sept., 1954) = *Orientalia et Biblica Lovanensia* I (University of Louvain, Belgium, 1957, 231 pp.) contains numerous valuable studies by Belgian and British scholars. Again we shall not mention names, except to say that such well-known scholars as **G. Ryckmans, R. De Langhe, G. R. Driver** and **H. H. Rowley** all present papers and that **J. M. A. Janssen's** bibliography of Egypt and the Old Testament" (pp. 29-63) is alone worth the price of the volume.

A very important volume from the pen of **Roland de Vaux, O. P.,** *Les institutions de l'Ancien Testament*, has appeared during the past year (Paris, Editions du Cerf, 1958, 352 pp., 990 francs): it contains an invaluable survey of the subject, which can be highly recommended.

Two exceedingly important volumes which fall between the fields of this survey, may be included here: *Eretz-Israel* III, in honor of the late **Umberto Cassuto** (Jerusalem, Israel Exploration Society, 1954, vii + 266 + xvi pp.) with over fifty contributions and English abstracts; *Eretz-Israel* V, in honor of **Benjamin Mazar** (1958, vii + 259 + 97* + vii pp. besides 26 full-page plates and many illustrations in the text), with a wealth of excellent papers in Hebrew (with English summaries) and in English. These two volumes are indispensable to all students of the Old Testament and related subjects.

Here we may also mention an interesting Hebrew synthesis of archaeology, geography, history, and literature, published by the able young archaeologist, Yohanan Aharoni (English title: *The Settlement of the Israelite Tribes in Upper Galilee*, Jerusalem, 1957, xv + 142 pp.). On the basis of extended surface exploration, controlled by excavations at Hazor and elsewhere, he shows that many sites in the hill-country of northern Galilee, south of the Lebanon border, were first occupied by the Israelites in or about the twelfth century B. C.

W. F. Albright

(To be continued)

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